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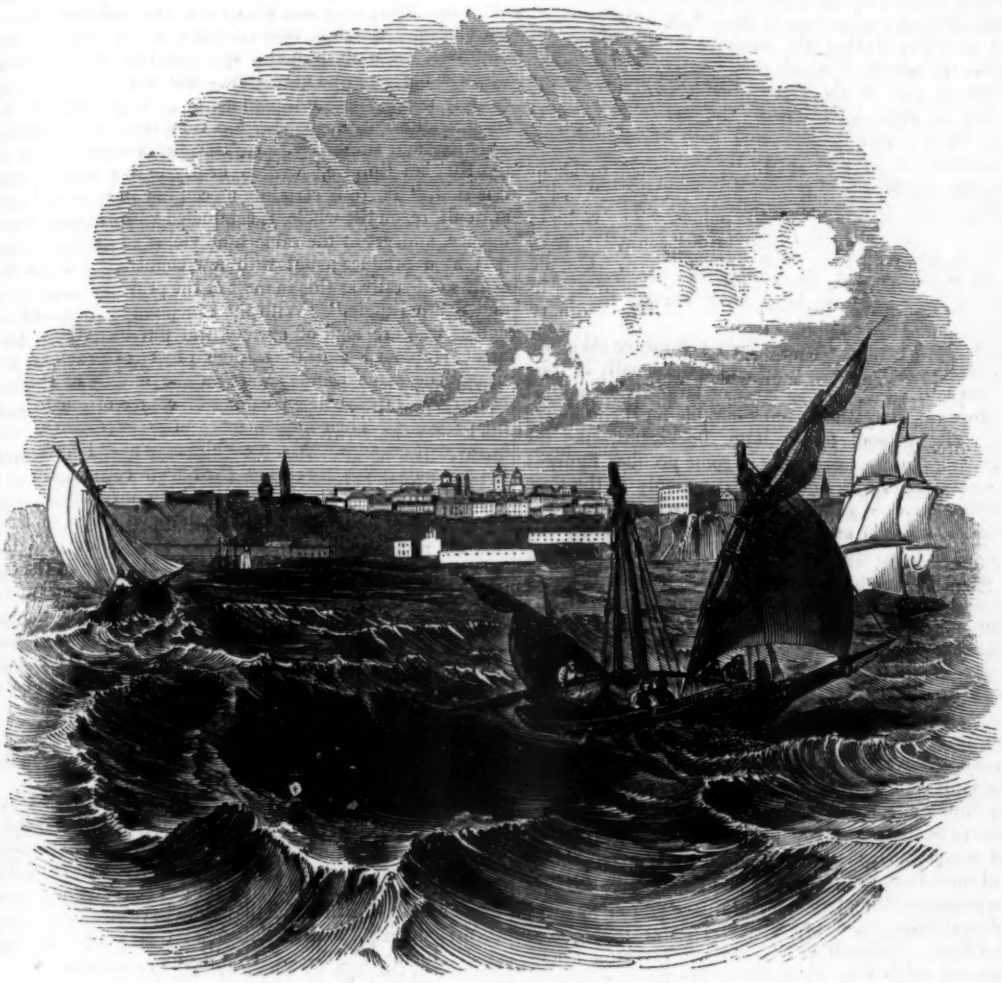
THE RUSSIAN EMPIRE.—AGRICULTURE AND MANUFACTURES.



[Odessa, on the Black Sea.]

If we look at the nature of the exports of Russia, we find that they mainly consist of raw materials, the principal of which are tallow, hemp, flax, bristles, hides, copper, and iron. The imports consist chiefly of cotton, woollen, and silk goods, wine, spirits, coffee, and sugar; and there has been a great increase of late years in the importation of materials for manufacture; and at the same time particular attention has been paid to the home growth of various products which form the raw material of manufactured fabrics. A writer, well acquainted with the principles of national and public economy, has pointed to the United States of America and to Russia as the principal countries with which England can establish, with most benefit to all parties, "a free trade, consisting of the interchange of wrought goods for raw produce." It is well known that, in all countries in which there is a great extent of fertile land unoccupied, the great drawback to prosperity is the difficulty of working up the raw produce of the soil. This obstacle, however, at once vanishes when an active interchange is established with a country which possesses peculiar facilities of converting raw materials into useful manufactured commodities. The case between Russia and England is thus put:—"If, in a remote and thinly peopled district of Russia, one hundred men raised food for three hundred, while it required two hundred men to make clothing for three hundred, then, as the labour of three hundred men would do no more than just replace the food and clothing consumed by three hundred, industry would be suspended, for the simple reason that it would produce no profit. But were the food raised in Russia by one hundred men sent to England, and were clothing for three hundred brought back in exchange, then in Russia the advance of food and clothing for two hundred would bring a return of food and clothing for three hundred; and the profits of agriculture, which before were nothing, would, through the intervention of

commerce, become fifty per cent." This theory, which is quite applicable to the United States and many other countries, and might be realised any day, could not, however, be so readily brought into practice in Russia, where the population is not in a state of freedom, and the peculiarities of climate compel the landowners to employ their serfs in working up the raw material which they produce, instead of sending it abroad in exchange for manufactured goods. Thus also in Canada, where, as in a great part of Russia, the labours of agriculture are suspended for several months, the long winter evenings are devoted to household manufactures, such as coarse linens and woollens; and, in the instruction papers for emigrants, Scotch and Irish girls are reminded "not to forget their spinning-wheels." In Russia, in consequence of the different condition of society, manufacturing industry is not confined to the domestic fireside, but is also carried on to a considerable extent in factories.

In 1836 the peasantry of Russia amounted to about 45,000,000, nearly one-half of whom "belonged" to the crown, and the remainder to the nobles. The value of an estate is estimated by the number of "souls," that is, *male* peasants of all ages, which are upon it. On the estate of Count Cheremetief, the largest landowner in Russia, the number of his "souls," to use the ordinary phrase, amounts to 110,000. In the interesting 'Details of Russian Husbandry,' contained in a recent work on Russia, by Mr. Venables, and which were supplied to him by his relative M. de Sabouroff, in the government of Tambow, we learn that 200 souls are usually reckoned to furnish 80 labourers, women and men, for the wives toil as well as their husbands. These work three days in the week for their master, who gives up to them in return the half of his land. A day's labour of a man includes that of his wife and his horse when requisite; and a peasant cannot change his employment nor move from home without his master's leave. To a village containing 200 souls the proportion of productive land allotted to the peasantry is about 2000 acres. A married couple have usually two acres devoted to a regular corn crop, two to a spring crop, two are in fallow, and they have generally an acre of meadow, and an acre of pasture land, with a house, outbuildings, and garden. Instead of paying rent, they cultivate an equal quantity of land on the domain of their lord.

During the long Russian winter there is little or no demand for the labours of husbandry; but as labour of any kind, although in a great degree it may be wasted or misdirected, brings nevertheless some return to the landowner or peasant-owner, as he may be called, he employs the serfs in his factory until the season for field labour again returns. Mr. Venables states that "there are few landed proprietors who do not carry on a manufactory of some kind or other." He further informs us that "not only have the Russian nobles, from the nature of their property and the constitution of their country, become manufacturers, but they carry on the business in every branch almost entirely to the exclusion of other classes, since they alone can command without difficulty, and on advantageous terms, the hands necessary for the purpose. A manufacturer who is not noble, being incapable by law of possessing serfs, while free labour is scarce, must compete at a disadvantage with a rival who can enforce the performance of whatever work he requires, and who has his operatives as it were under military discipline." The Russian peasant manifests an extraordinary aptitude for the varied labours which he is required to perform. "He will plough to-day, weave to-morrow, and help to build a house the third day." Many travellers have concurred in praising the handiness and ingenuity of the peasantry.

Another cause which tends to promote manufacturing industry in Russia is the low value of agricultural produce. M. de Sabouroff states that "two or three successive years of good crops overload us to the greatest possible degree; no human force can dispose of the produce;" and yet, he observes, "however full of grain of all kinds our storehouses may be, it is clearly impossible, as you see, to check the production. We cannot dismiss our people when we do not want them, as if they were hired labourers; and in spite of the superabundance on hand, they must continue to produce, were it only by way of employment." In the government of Tambow, rye generally sells at 4*s.* per measure of 216 lbs. (nearly 4 bushels), and in November, 1837, the price was only 3*s.* 9*d.*, and wheat was not much dearer. Oats had been occasionally sold at 1*s.* per chetvert, which is about 5 bushels. As agriculture improves, the want of markets will be more severely felt, because the progress of manufactures does not create an entirely non-agricultural population. At present most of the operations of husbandry are conducted with singular rudeness and simplicity. In Tooke's excellent 'View of the Russian Empire,' written nearly half a century ago, it is said, "There is certainly no country in Europe where agriculture, on the whole, is conducted with so much negligence, and yet at the same time yields so great and important a produce; but with few countries has Nature dealt so liberally as this in most of the provinces of Middle and South Russia." With the exception of the estates of nobles who are fond of agricultural pursuits, the implements employed and the various processes practised are nearly the same as they were in the middle of the last century. Improvements cannot of course originate with the peasantry. Their implements and practices are worthy of the earliest ages. Mr. Venables says:—"I have seen the peasants often threshing their own corn without an implement of any kind, merely taking up the sheaf by the lower end and beating the heads upon a spot of hard dry ground, swept clean as a threshing-floor. All the agricultural implements in general use are rude in the extreme; the peasant's spade is a mere paddle of wood, sometimes shod with iron, but more often not; his plough is an ineffective instrument drawn by a weak pony; and his harrow merely consists of boughs fastened together, with the thin branches cut off a few inches from the base, so as to form a projecting tooth; his waggon does not contain three barrow-loads, but it is certainly as much as his miserable horse can draw." And yet under this wretched system the production of grain exceeds the average consumption of the country. The balance is restored by thriftlessness and waste; and then perhaps follows a dearth, should the succeeding year be unfavourable.

Two causes, therefore, at present combine to stimulate the progress of manufacturing industry. In some cases, there are instances in which the nobles have abandoned agricultural pursuits, and the labour of their serfs is devoted wholly to manufactures. One factory is mentioned in Mr. Venables's work, in which 3000 persons are constantly employed. Mr. Venables has given us some account of the condition of the factory serfs:—"When the manufactory is established on a considerable scale, and is constantly at work, the peasants are usually put on the footing of hired labourers, and, instead of having an allotment of land, are paid for their work, and left to provide themselves with the necessaries of life. Their master, it is true, can compel them to work in his manufactory, and that on his own terms; but these are regulated by custom, and since the serfs are paid at the same rate with the free workmen who are employed with them, they seldom have reason to complain of injustice."

[To be continued.]

SCULPTURE.

From an early period in the history of nations attempts have been made to imitate the human figure in materials of various kinds, both of the size of life and of other sizes greater or less than that. If we inquired into the

motive which prompts this attempt at imitation, we should probably find that it is a wish to render honour to the person whose features and form are imitated, either from a religious feeling of adoration or a national feeling of admiration for deeds or services rendered to the state. One of these two motives will account for the production of by far the greater number of statues which successive ages have witnessed.

As the statues were in most cases intended to last for a considerable period, materials were generally chosen which were not of a perishable nature. Sometimes *clay* was employed, being first modelled into the required form with fine tools, and afterwards baked, by which it acquired a hardness little inferior to that of stone. *Woods* of almost infinite variety were used for the purposes of sculpture, the hardest being those best adapted for the object held in view. At one period of Grecian history a kind of sculpture called *chryselephantine* was much in favour. In this the statue appears to have consisted of a variety of materials, of which metal of some description or other formed one. One of the most extraordinary specimens of this kind of sculpture was that in which ivory and gold formed the superficial shell of the statue: such a one was the statue of Jupiter by Phidias. The figure was made in the first instance of wood, and then covered over with ivory and gold, in pieces of various sizes and shapes. The mode of effecting this has been investigated by M. Quatremère de Quincy; and the reader will find, in an early volume of the 'Penny Magazine' (vol. ii., p. 113) some interesting details on the subject.

Other kinds of sculpture have been termed *polychromic* and *polylithic*, the former word implying *many-coloured* and the latter *many-stoned*. These have been deemed less creditable to the fine taste of the sculptors than those specimens which are of uniform colour and uniform materials: the combination of different materials to produce different colours in drapery, &c. must have brought the statues to a near resemblance to the painted wooden saints of the middle ages; while the combination of various stones and marbles gives a patchwork appearance which draws attention more to the mechanical ingenuity of the stone-cutter than to the genius of the sculptor.

That very important class of statues formed by casting in metal, it does not fall within the object of the present paper to describe. Nor need we bestow much attention to several unimportant specimens which the fancy of the early sculptors sometimes led them to execute; such as a statue of Augustus, formed in *amber*—statues of aromatics or of combustibles, used at *funeralia* and other public exhibitions—a statue of Venus, made of loadstone, which attracted another of Mars, made of iron, &c. But we have to speak of a material for statues, which, from the chasteness and beauty of its appearance, the correctness with which it can be chiselled, and the long period which it will endure without injury, has been a favourite with sculptors from remote ages, namely, *white marble*.

The word *marble* has been often used in a very indefinite sense, as we frequently find it applied to all sorts of polished stones employed in the decoration of monuments and public edifices, or in the construction of private houses. But a definition has been proposed which will separate marble from other stones frequently confounded with it, namely, that it will effervesce with dilute nitric acid, that it can be scratched with fluor spar, and that, in its turn, it is capable of scratching gypsum: this will give it a medium position, as to hardness, between the granites, porphyries, and other silicious stones, on the one hand, and gypseous alabaster on the other. Coloured marbles need not engage our attention here; but a few remarks may be desirable respecting white or statuary marble.

The Greeks were accustomed to employ two sorts of white marble, the *Parian* and the *Pentelican*. The former was derived from quarries at Paros in Greece. It was nearly of a snow-white colour, fine, granular, and, when polished, of a somewhat waxy appearance: it hardened by exposure to the air, which enabled it to resist decomposition for ages. Dipœnus, Scyllis, Malas, Micciades, and other early sculptors, employed this marble. "It receives," says a recent writer, "with accuracy the most delicate touches of the chisel, and retains for ages, with all the softness of wax, the mild lustre even of the original polish. The finest Grecian sculptures which have been preserved to the present time are generally of Parian marble, as the Medicean Venus, the Diana Venatrix, the colossal Minerva (called *Pallas of Velletri*), Ariadne (called *Cleopatra*), and Juno (called Capitolina). It is also Parian marble on which the celebrated tables at Oxford are inscribed." This latter remark refers, we presume, to a large flat stone forming part of the Arundelian Marbles at Oxford: it is called the "Parian Chronicle," as it contains an inscription recording events which occurred in Grecian history.

The other kind of ancient white marble, the Pentelican, was drawn from a quarry at Mount Pentelicus near Athens. It was more compact and of finer grain than that of Paros, but greatly resembled it in other respects. The splendid specimens of sculpture executed at Athens during the age of Pericles were principally formed of this marble, perhaps because it was to be procured in the immediate neighbourhood. The Parthenon was constructed entirely of Pentelican marble; and the Royal Museum at Paris contains several statues of this marble, such as the Torso, a Bacchus in repose, Paris, the throne of Saturn, and the tripod of Apollo.

To pass from ancient to modern times, we find that Carrara in Italy is the place from whence most sculptors procure their marble. The kind produced from that neighbourhood is beautifully white, but is often traversed by grey veins, which renders it difficult to procure perfect white blocks of a large size. There are, in the mountains near Carrara, upwards of a hundred quarries of marble in a ridge of mountains, some of which have been worked ever since the time of the Romans. Three figures, of Jupiter, Bacchus, and Hercules, are cut on the vertical side of a marble rock in one of the quarries; and near them are inscribed the names of various artists and travellers who have visited the spot. Some of the coarser kinds of marble were employed for the public buildings of Rome; but the finer sorts, which were discovered about the time of Pliny, were used by the sculptors of Rome in lieu of the Parian and Pentelican marbles. The quarries lay neglected for several centuries; but the Pisans, who took possession of the district in the twelfth century, resumed the works, and they have been continued ever since. Some of the quarries furnish blocks of coarse marble, while others supply the sculptor with fine white blocks. The material is most abundant, and furnishes employment to more than twelve hundred workmen in hewing, squaring, &c. The quarries yield an annual revenue of 750,000 francs, while the value of the exported material is half a million. The blocks are conveyed by ox-teams to the Spaggia, or beach of Avenza, where the storehouses are, and whence the marble is shipped on board the vessels that anchor in the roads. In the town of Carrara are shops for the sale of common objects and ornaments of marble, which are worked by native sculptors. Many foreign artists repair to Carrara for the sake of purchasing the blocks which they require for their works, and which are rough-hewn on the spot.

So varied are the genius and talents required by a sculptor, that we cannot venture to enter into any details as to the principles of sculpture considered as one of the fine arts; yet there are many of the mechanical processes connected with it which admit of being briefly described,

and which will not be devoid of interest to a general reader.

The first portion of the process of forming a statue, as detailed by Mr. R. Westmacott, jun.,* is as follows:—The sculptor, having invented or conceived his subject, proceeds from a small sketch, drawn on paper, or modelled in clay or wax, to build up his statue or group, for which purpose a general nucleus or skeleton is first formed of wood or iron; to this, small crosses are generally attached, in order to make the clay adhere to it; the figure is then built up in clay, of which different sorts are used according to the fancy of the artist; the figures, even if they are intended to be draped, should always be carefully modelled naked, and the drapery should be added afterwards. This modelling is effected by very simple tools, made of wood or ivory, with their ends pointed, round, square, or diagonal; with these, after having by hand reduced the clay to something like what is required, he produces the more minute effects of form and expression. In modelling *alto* or *basso relievo*, a plane or ground (generally of clay) is prepared, upon which the sculptor draws his proposed design; the clay is then placed upon this plane, the outline of the figures being carefully preserved by attending to the drawing already made upon the surface.

This clay figure is formed from the sculptor's imagination, from a plaster-cast of the person represented, from another statue already formed, or from other sources, according to the circumstances of the case; but in every instance it represents the precise object which the sculptor has afterwards to cut in stone. He does not proceed, however, to copy in marble immediately from this model: he makes a plaster-mould of the model, takes a plaster-cast from the mould, and proceeds to chisel his marble with that cast as his pattern. In order to produce the mould, the model is coated to a considerable thickness with plaster of Paris, which, when dry, is removed from the clay model in two or more pieces, according to circumstances. The plaster-shell, or crust, being now tied together, it forms a hollow mould, the *inside* of which represents the *outside* of the model. From this mould a cast is produced by pouring liquid plaster into it. For the mode of effecting this, as well as of forming the moulds, we refer the reader to 'Plaster Figures and Casts,' *Penny Magazine*, vol. vii., p. 394.

The plaster-cast produced from the mould is the pattern from which the sculptor works in his future proceedings. His block of marble is placed at the side of the cast, so that he can look from one to the other. The plan which the ancient sculptors adopted was to mark a number of black spots on the prominent parts of the model; place similar spots, and similarly situated with respect to one another, on the block of marble, and then chip away the block until the black spots were sunk to as great a depth as those in the model. But the moderns have brought slight mechanical aids to their assistance; one of the modes adopted being as follows:—After having, by rough measurement, ascertained that the block is of sufficient size, it is fixed on a basement of stone, or on a strong wooden bench called a *banker*, in front of which is a long strip of marble divided into feet and inches. A strip of marble divided in exactly the same manner is also placed in front of that part of the banker on which the model is placed; and a wooden perpendicular rule, the height of the entire work, is so placed as to be moveable from the strip of marble or scale under the model to that under the block of marble which is to be cut. This rule or instrument being first placed on the scale of the model, and the exact distance taken from it to any prominent part, as, for instance, the end of the nose, it is then removed to the corresponding position of the other scale, and the workman cuts away the marble to the same distance from the perpendicular at the same height, that is, till he has arrived at that point of the block which is to become the tip of the nose. He then proceeds in the same way with another prominent part, as the top of the head, the chin, &c., until at length he has a rough representation of the whole figure.

Various machines have been devised for producing the same effect more rapidly and conveniently. In these there is generally a sliding rod with a needle at the end, so situated that the sculptor can measure how far any particular part of his model, the tip of the nose for instance, is from the front of the banker; and having found the proper position of the corresponding point on the block of marble, he drills a hole to the same depth from the front as in the model. Another prominent point on the model is taken, its depth from the front measured, and a hole drilled to a similar depth in the corresponding part of the model. A similar plan is adopted at a great many prominent parts, until the block is so drilled as to resemble a piece of honeycomb. The portions of marble between these holes are then cut away with the chisel, care being taken never to remove any part below where the drill has been. Mr. Behnes obtained a gold medal from the Society of Arts for an improved machine of this kind; but it is too complicated to be described here.

When by either of the above methods a rough statue has been produced by the assistant workmen, the sculptor brings the resources of his genius into play, for the production of those wonderful specimens of truth, beauty, and expression which exalt his labours to such a high rank. Steel chisels, varying in breadth from an inch to a mere point, are the chief tools which he employs, although for very deep parts drills are occasionally employed. With his chisels he goes over every part of the surface of the marble, chipping away more or less according to the circumstances of the case: iron-headed hammers, weighing from two to four pounds, are used to strike the chisels.

When the chiselling is completed, it is usual to work over the whole surface with rasps, and afterwards with very sharp files. If the piece of sculpture is required to have a very smooth surface, a piece of pumice-stone is used after the file; and sometimes the whole surface is rubbed carefully over with small pieces of gritstone, accommodated to the various forms of the surface, such as flat spaces, rounds, and hollows of different depths.

* Treatise on 'Sculpture,' in *Encyc. Metropol.*

Tar-making in Sweden north of the Bothnian Gulf.—The machinery of the world could scarcely go on without tar; yet we seldom think of inquiring how it is made. Fir-trees (*pinus sylvestris*) which are stunted or from situation not adapted to the saw-mill are peeled of the bark a fathom or two up the stem. This is done by degrees, so that the tree should not decay and dry up at once, but for five or six years should remain in a vegetative state, alive but not growing. The sap thus checked makes the wood richer in tar; and at the end of six years the tree is cut down, and is found converted almost entirely into the substance from which tar is distilled. The roots, rotten stubs, and scorched trunks of the trees felled for clearing land are all used for making tar. In the burning or distilling, the state of the weather, rain, or wind, in packing the kiln, will make a difference of 15 or 20 per cent. in the produce of tar. The labour of transporting the tar out of the forest to the river-side is very great. The barrels containing tar are always very thick and strong, because on the way to market they have often to be committed to the stream to carry them down the rapids and waterfalls. The price is only 6*s.* 8*d.* sterling to the peasant, and often not so much. It would not pay his time and labour; and those who follow tar-making are always the most indigent; but they must deliver to the "privileged" merchants of the towns, who are generally their creditors, the article these choose to take, not that which in a free market will best repay the maker.—*Laing's Tour in Sweden in* 1838. [The process of making tar is also described in the 'Penny Magazine,' No. 247 illustrated by a wood-cut.]

ARQUES.

[Castle of Arques, Normandy: The Gateway Towers.—From a Drawing made on the spot, 1839.]

The castle of Arques is situated in the immediate neighbourhood of the small town and river of that name, in the department of Seine Inférieure, in Normandy. The population of the town is very small, and its trade, principally in oxen and horses, insignificant. The river, the source of which is above St. Saens, throws itself into the ocean at Dieppe, after a course of about eleven leagues in length. The forest of Arques is about one league long, and a quarter of a league broad. The castle stands upon a very bold site, crowning, as it does, the extreme ridge of a line of chalk hills of considerable height, which commence to the west of Dieppe and terminate here. It is surrounded by a wide and deep fosse. The outline of the fortress is that of an irregular oval, varied by towers of uncertain shape, placed at unequal distances. Two piers only of the drawbridge remain, and three successive arches of the gateway, which, however, now look like great shapeless rents. The towers are of immense size and strength. Those at the entrance and those nearest to the north and south extremities are considerably larger than the others. One of the lateral towers is of a very unusual form. The architect appears to have intended originally to make it circular, but changing his design in the middle of his work, attached to it a triangular appendage, probably by way of a bastion. Three other towers adjoining this are square, and look rather like buttresses than towers. The walls have been covered in most parts with a facing of brick, but which, now worn or broken away, exhibits beneath either rubble or a construction of alternate layers of brick and flint disposed with all the regularity of Roman workmanship, the bricks too having strongly the characteristics of Roman manufacture. The castle is internally divided into two wards. The first and outer one is everywhere rough with the remains of foundations; the second and inner ward, which is by far the largest, is approached by a square gate-house with high embattled walls, and contains, towards its farther end, the quadrangular keep, the shell of which is alone standing. The walls of this shell are of immense height, and in their perfect state were carefully faced with large square stones, most of which have been torn away. The vaults beneath the castle are very spacious, and may still be traversed for a considerable distance. From this description the general grandeur of the appearance of this noble ruin may be partly comprehended; and although it is now evidently abandoned to the ravages of time, wind, and weather, its mouldering walls and towers may yet remain for centuries to attest the grandeur that has departed.

Antiquarians suppose a castle to have been founded little posterior to the Christian era, and upon the site of an earlier Roman fortress. If so, that, as well as the Roman, must have disappeared, for William, an illegitimate son of the 4th duke of Normandy, built the present castle, and was created count of Arques. This same nobleman, about 1055, during the reign of William VII., duke of Normandy, since so popularly known under the name of the "Conqueror," assumed the title of duke, and fortified various castles, among others that of Arques. The

rightful duke summoned his refractory vassal to return to his allegiance, but received so insulting an answer, that he immediately set out to attack him in the castle of Arques. Owing to the immense strength of the fortress, the duke saw that it would be easiest to reduce it by famine. He therefore caused entrenchments to be dug around the castle, and then left the prosecution of the siege to Giffard, count of Longueville, leaving the strictest command against the admission of succours to the garrison. The count had been abetted in this revolt by Henry, king of France, to whom therefore he sent an account of his deplorable position. Henry instantly assembled troops and marched to his relief. Giffard, hearing of his approach, placed a strong ambuscade in a wood through which the French must pass, and then sent forward a small body of horsemen with the apparent intention of disputing the way. The French soldiers rushed hastily upon this band, which retreated, followed by its enemy into the very heart of the ambush. In an instant the concealed Normans poured forth, and committed the most terrible slaughter upon their surprised foes. Henry however succeeded in throwing succours into the castle, and then attacked Giffard in his entrenchments. The attack was unsuccessful, and Henry returned to France. The duke, hearing of what had been done, was extremely exasperated, and immediately returned to the command, swearing he would not quit it till the count and the castle were in his power. The garrison was at last reduced to such distress, that the count, throwing himself upon the generosity of his relative, asked only for the lives of his adherents and himself, which being granted, the fortress was surrendered. When the duke saw the miserable appearance of the prisoners, he was touched with pity, and at once pardoned the whole: the count in particular he treated with kindness and affection, although he was afterwards obliged to banish him from his dominions. In 1149 Arques was besieged by Eustace of Boulogne, who claimed the duchy of Normandy, the castle being then in the possession of Geoffrey, earl of Anjou. The siege however was raised shortly after, in consequence of a treaty. During the wars between Richard II. Cœur-de-Lion, duke of Normandy, and Philip of France, Arques appears to have been alternately possessed by both; at the treaty of 1196 it was left in possession of the former as duke of Normandy. In 1449 the English duke of Somerset, being besieged in Rouen by the king of France, surrendered on certain conditions, giving up at the same time the castle of Arques among others to the French. But the great historical circumstance which has given an imperishable interest to the name of Arques, is the battle fought here in 1589, between the popular Henri IV. of France and the duke of Mayenne, the chief of the League, the consequences of which were of the highest importance. We shall take the opportunity of presenting our readers with another view of this noble remain, to notice this battle with its causes and results.

THE DANCING MANIA.

[Concluded from No. 488.]

The dancing mania, or in other words, this instinct for curing mental and physical uneasiness by violent and regular motion, has prevailed at other times and places; and the examples given by Dr. Hecker bring down the morbid chain of phenomena from the middle ages to our own times.

Of these varied forms of the same irresistible impetus the most famous by far is tarantism, the disease supposed to be caused by the bite of the tarantula.

This insect is a ground spider, found in Apulia, a southern province of Italy, where the malady first made its appearance. The learned Nicholas Perotti, who was born in 1430, and died in 1480, gave the earliest account of this remarkable disorder. Those who were bitten became melancholy and stupified; and in many this condition was combined with an exquisite sensibility to music, so that the first notes of their favourite airs made the patients leap up shouting for joy, and they danced without intermission till they sank to the ground, exhausted and almost lifeless. In others, the disease did not take this cheerful turn, but they wept constantly, spending their days in misery and anxiety; and some are said to have died in a paroxysm of laughing or crying.

Tarantism however did not originate in the fifteenth century, for Perotti speaks of it as a well-known malady. Besides which, "a nervous disorder that had arrived at so high a degree of development must have been long in existence, and doubtless had required an elaborate preparation by the concurrence of general causes." (Hecker, p. 66.) For, according to Dr. Hecker's ingenious and probable theory, an epidemic is the result of a given social state, and reflects as in a mirror the faults and follies, the wants and miseries, of the people among whom it appears, as well as the terrestrial and astral influences then prevailing. And as an inundation cannot be the result of any momentary cause, but is produced by long-continued rains, which in their turn are the effects of still remoter agents, so a deep-rooted disorder spread over a large district, though it may seem to arise suddenly, never does so in reality, but has been prepared by a long series of habits and opinions. Even in individuals the onset of disease is rarely so sudden as the uninstructed suppose; the hæmorrhage in the brain, which destroys life by apoplexy, commonly results from the long-continued ossification or earthy brittleness of an artery; and even an attack of fever supposes a predisposition in the patient, since of millions exposed to its exciting causes, comparatively few are effected with it. The symptoms produced by the bite of venomous spiders were well known to the ancients; they enumerate among them lividity of the whole body as well as of the face, difficulty of speech, nausea, vomiting, watchfulness, lethargy, and fainting; and even death, they add, is sometimes the consequence of the bite. But they do not mention an irresistible inclination to dance among the symptoms, nor even that the patients were accidentally cured by it. The first who approaches the point is Gariopontus, a physician of the eleventh century, who describes a kind of madness in which "the patients in their sudden attacks behaved like maniacs, sprang up, throwing their arms about with wild movements, and if perchance a sword was at hand, they wounded themselves and others, so that it became necessary carefully to secure them. They imagined that they heard voices and various kinds of sounds, and if during this state of illusion the tones of a favourite instrument happened to catch their ear, they commenced a spasmodic dance, or ran with the utmost energy which they could muster until they were totally exhausted." (Hecker, p. 69-70.)

These sufferers were looked upon as persons possessed. Gariopontus does not mention the tarantula as a cause of the disease, but says that if it has been produced by the bite of a mad dog, or if the patient foams at the mouth, the patient dies within a week. He calls the malady *anteneasmus*, probably a corruption of *enthusiasmus*.

This curious form of insanity was unquestionably a forerunner of tarantism, the latter having begun probably about 1374, or the period when St. Vitus's dance first appeared in full force; but it was in truth the development of germs already existing, and founded on morbid phenomena of at least two centuries' standing. The pomp of religious processions, the custom of public penance, and the mysticism with which the doctrines of Catholicism were then blended, must have brought many minds into a state fit for the reception of a nervous disorder. Moreover, Italy was ravaged by the oriental plague sixteen times between 1119 and 1340. Small-pox and measles were more destructive than in our times. St. Anthony's fire (erysipelas) was much dreaded, and

the leprosy banished its innumerable victims from human society. Then came the black death, the acme of these calamities; and as individuals become morbidly sensitive under the pressure of misfortune and anxiety, so that slight causes, insufficient to affect the healthy, induce in them severe diseases, so it was with the Italian nation, whose natural sensitiveness was then so much increased, that the bite of a venomous spider, or rather the fear of its consequences, was sufficient to excite tarantism—like a spark bringing a heap of combustibles into a blaze. Thus, in the language of Dr. Hecker, "the furies of *the Dance* brandished their scourge over afflicted mortals;" and music, strange to say, while it excited these ecstatic motions in the predisposed, lulled them when at their height—at once the bane and antidote.

At the close of the fifteenth century, tarantism had spread beyond Apulia. Death itself was expected from the wounds inflicted by the venomous spiders, or, in more favourable cases, the patients were said to pine away in despondent lassitude. The flute or cithern alone afforded relief; at their sound the afflicted opened their eyes and began to dance, at first following the slow movement of the music, and then hurried on with the most passionate vivacity, as the strain changed to a more lively one. The rude clown became graceful, even physical clumsiness giving way before moral excitement. City and village resounded with the fife, the clarionet, and the Turkish drum, and *tarantati*, or persons bitten by the tarantula, were to be seen everywhere, whose medicine was in these instruments. Alexander ab Alexandro saw a young man in a paroxysm of the malady. "He listened with eagerness and a fixed stare to the sound of a drum, and his graceful movements gradually became more and more violent, until his dancing was converted into a succession of frantic leaps, which required the utmost exertion of his whole strength. In the midst of this overstrained exertion of mind and body the music suddenly ceased, and he immediately fell powerless to the ground, where he lay, senseless and motionless, until its magical effects again aroused him to a renewal of his impassioned performances." (Hecker, p. 77.)

The prevailing doctrine of the time was, that though the poison of the tarantula was expelled by music and dancing, yet if the slightest trace remained, this became a permanent germ of the disease; and a complete expulsion seems to have been rarely hoped for; so that relief rather than a cure was expected, and the *tarantati*, like the St. Vitus's dancers, awaited with impatience the return of their annual festivities.

Matthioli, whose commentary on Dioscorides was published in 1565, gives the same sort of account as Alexander. The hopeless languor of the patients, their starting from their couches at the first sound of the melodies composed for their benefit (the *tarantellas*, as they were called), the relief they experienced from the most furious dancing, and their sudden exhaustion if the music ceased for an instant, form a lively picture of this singular epidemic.

Among other peculiarities, some patients had an impetuous liking for certain colours; red, though detested by the St. Vitus's dancers, was generally a favourite with the *tarantati*; others preferred black or yellow, which was explained, agreeably to the theories of the time, by the doctrine of temperaments. When the desired colour appeared, the patient rushed towards it with the eagerness of a lover, and devoured the handkerchief, or whatever it might be, with kisses, while the tears streamed from his eyes.

On one occasion the Cardinal Cajetano went to see the dancing fits of a certain Capuchin friar at a monastery in Tarentum. When the friar, however, saw the purple robe of the Cardinal, even the tarantella which he was dancing could no longer satisfy him, so enamoured was he of the rich colour of the dress. As he did not immediately attain his object, he fell into a swoon, from which he was recovered by the Cardinal kindly giving him his purple cape. He seized it with ecstacy, pressing it to his forehead, cheeks, and breast, and then again began his frenzied dance.

Another symptom was the extraordinary passion for the sea manifested by the patients. Some, hurried on by an ungovernable impulse, or, in Scottish phrase, *fey*, rushed into the blue waves, while others were contented with ample vessels filled with water, and surrounded by water plants, in which they bathed their heads and arms. But the chief remedy was music. Attempts indeed had been made in antient times, as we learn from Pliny and Cælius Aurelianus, to soothe the pain of sciatica and the paroxysms of madness by the melody of the flute; and, what comes still nearer the present point, it was done to prevent bad consequences from the bite of a viper. But these anticipations of the method of treating the *tarantati* were rare. Many, when bitten by the tarantula, died miserably because the tarantella was not played to them. The different kinds of the tarantella were distinguished by names having reference to the various moods of the patients. Thus one was called *panno rosso*, or red cloth—evidently intended, from its liveliness, for the wilder patients; while the *panno verde*, or green cloth, "was suited to the milder excitement of the senses caused by green colours, and set to idyllian songs of verdant fields and shady groves." In the appendix Dr. Hecker gives various pieces of music for the dance of the *tarantati* from Athan. Kircher. Their universal termination in a minor key would seem to show, as we might expect, that the joyousness of the dancers was forced, and that amid their fiercest transports, melancholy was the most deeply rooted of their sentiments. The firm persuasion that the bite of the tarantula was highly dangerous had its effect on the stoutest. "So late as the middle of the sixteenth century, the celebrated Fracastoro found the robust bailiff of his landed estate groaning, and with the aspect of a person in the extremity of despair, suffering the very agonies of death, from a sting in the neck, inflicted by an insect which was believed to be a tarantula. He kindly administered, without delay, a portion of vinegar and Armenian bole, the great remedy of those days for the plague and all kinds of animal poisons, and the dying man was, as if by a miracle, restored to life and the power of speech. Now, since it is quite out of the question that the bole could have anything to do with the result in this case, notwithstanding Fracastoro's belief in its virtues, we can only account for the cure by supposing that a confidence in so great a physician prevailed over this fatal disease of the imagination, which would otherwise have yielded to scarcely any other remedy except the tarantella." (Hecker, p. 98-9.)

Ferdinando, a physician in Messapia, at the beginning of the seventeenth century, mentions the existence of sceptics who thought that tarantism was merely a melancholy depending on the imagination. Some of them, however, paid dearly for their incredulity. Thus, Jo. Baptist Quinzato, bishop of Foligno, having allowed himself, by way of a joke, to be bitten by a tarantula, found no cure till he danced like other tarantati. Some of the clergy who thought the remedy derogatory to their station, and would, if possible, have abstained from its use, were obliged, after a tormenting delay, to have recourse to the inevitable dance. Hysterical women, moreover, joined the throng, and danced, without having been bitten by the tarantula; and impostors were not wanting. Hence we may see why many physicians and naturalists have denied the existence of tarantism as a real disease, and attributed the whole to fraud or imagination. They tried, indeed, to produce the disease, and failed. But the subjects of their experiments were healthy men, uninfluenced by a belief in the disease; and their negative results could hardly disprove phenomena

which had existed for nearly four hundred years. Tarantism declined with the progress of the seventeenth century, and is now limited to single cases.

In setting forth the history of these lively plagues, St. Vitus's dance and tarantism, we have given the narration almost in the words of Dr. Hecker, or rather his translator, Dr. Babington; so that our account may so far be considered a faithful abridgement of his work. The remainder, however, we must cut short; partly lest this article should swell to an unreasonable length, and partly because the other species of the dancing mania are either less interesting or better known.

A species of the dancing mania exists in Abyssinia, where it is called *Tigretier*, from the Tigré district, where it chiefly prevails. Nathaniel Pearce, who resided in Abyssinia from 1810 to 1819, and afterwards published his life and adventures, gives an account of it. The disease consists of a fever followed by emaciation and unintelligible stuttering. The first remedy, in general, is to have "the assistance of a learned dofter, who reads the gospel of St. John, and drenches the patient with cold water daily for the space of seven days—an application that very often proves fatal." But the most efficacious treatment consists in loud and long-continued music; the patient, as in the case of the St. Vitus's dancers and the *tarantati*, having strength enough to tire out the musicians, though weak in other respects. The Abyssinians of modern times may be considered, in many respects, as representing the Europeans of the middle ages; and it is not surprising therefore to find a form of disease which the progress of civilization has expelled from our happier countries, still lingering in Africa. If we may believe Nathaniel Pearce, two other singularities of the dark ages continue to survive there. First, the Abyssinians have a sect of flagellants, called *Zackarys*, who boast that they are descendants of St. George. They scourge themselves till they drain blood, and make wounds with knives to boot. Secondly, this people believe in zoomorphism, or the transformation of men into beasts. The belief of the middle ages was expressed by the word *lycanthropy*, or wolf-mannishness: certain persons, it was thought, had the power of changing themselves into wolves, and they were sometimes condemned to the flames for this *uncanny* faculty. Among the Abyssinians, the blacksmiths and potters form a separate caste, and are supposed to be able to turn themselves into hyænas and other beasts of prey.

These African peculiarities are quite as curious as the dancing plagues of Germany and Italy; but as Horace observes that the brave men who lived before Agamemnon are unhonoured and unwept for want of a poet, so it has happened that these notable doings in Abyssinia are almost unknown for want of a greater historian than N. Pearce. It is easy to perceive in the accounts handed down to us of the dancing epidemics of the middle ages, how much of the disorder depended on sympathy and imitation. Man, says Aristotle, is an imitative animal; and this great truth holds good in the contortions of disease, as well as in our habits, occupations, and amusements. It may seem strange to some that there should exist an instinct of copying the painful struggles of a patient in convulsions, but so it is; and as the avalanche, the farther it has descended, the more easily it collects its reinforcements, so the greater the number of patients attacked, the greater is the moral and physical influence which they exercise on those around them.

There are sufficient modern instances to show that the morbid sympathy which compelled so many to join the ranks of the St. John's dancers, or the *tarantati*, is by no means extinct, though the happier circumstances of our social frame impose some check upon its extravagances.

Thus, for example, at Hodden Bridge, in Lancashire, a girl in a cotton factory put a mouse upon the bosom of another girl, which threw her into convulsions that lasted twenty-four hours. Three more were attacked the next day, and six more on the following one, and, in four days from the beginning of the epidemic, the number of patients amounted to twenty-four. An opinion prevailed that the disease originated from the cotton; and the patients were cured in a day of their fits by being assured that this supposition was false, and by electric shocks, aided by a cheerful glass and dancing. This incident appears to have occurred about 1787. In 1801, a young woman coming into the Charité hospital, at Berlin, to visit a patient, fell down in strong convulsions. The fits spread as in the former instance, but the treatment was continued for four months before it was finally successful.

But these epidemic convulsions spread most widely when they arise from religious enthusiasm. A disorder of this kind began in a Methodist chapel at Redruth, in Cornwall, and was diffused with the rapidity of lightning over the neighbouring towns of Camborne, Helston, Truro, Penryn, and Falmouth. The spasms were of frightful vehemence, and at least 4000 persons were affected with them.

Similar attacks took place in the Shetland Islands during a long series of years, and perhaps occasionally occur even now. In one parish an intelligent and pious minister prevented these paroxysms, by which the service in his church was impeded, by observing that the best cure was plunging in cold water; and as his kirk was near a fresh-water lake, and the remedy was thus at hand, "not a single Naiad was made," and the fits were stopped by simple fear.

But perhaps the *convulsionnaires*, in France, are the most remarkable examples in modern times of a convulsive mania. There died at Paris, in 1727, the Deacon Pâris, a zealous opponent of the party in the French church who were called Ultramontanists. Four years after his death, it was reported that miracles were performed at his tomb. Many of those who visited it were seized with tetanic spasms and other convulsive symptoms, accompanied by quickness and irregularity of the pulse. The *convulsionnaires*, like the St. John's dancers and the *tarantati*, were relieved by blows, and this kind of assistance was called the *grands secours*. Magnetic sleep was first observed in this sect. Their singular proceedings went on without interruption till the year 1790, when the French Revolution, like a strong counter-irritation, put a stop to them. Yet, after all, it did not *quite* put an end to them, for this once celebrated sect still existed in 1828, though without the convulsions from which they derived their name. It is needless to recall to our reader's recollection the dancing dervishes of the East, or the Shakers of the United States.

As we sometimes meet with a person whose opinions are those of the dark ages, so it occasionally happens that a mediæval distemper, supposed to be extinct, returns in all its unmitigated singularity. Dr. Babington quotes a case approximating to the original dancing mania, related by Mr. Kinder Wood, in the seventh volume of the 'Medico-Chirurgical Transactions.' The patient, a young married woman, leaped and danced, at first irregularly, after to a more measured time, and finally, like the original votaries of St. Vitus, to music. She danced regularly to an unbraced drum, but stopped when a braced one was beaten; and was ultimately cured by the rolls of a well-braced drum, which prevented her from leaving her seat.

In conclusion, it is difficult to determine whether we are to look upon the dancing mania merely as an instructive chapter in the history of human weakness, a link between voluntary and involuntary actions, or whether we should not rather consider it as a union of the spiritual and the material—a glimpse into the unknown world of psychical phenomena!

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